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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,082	02/27/2002	Kong-Beng Thei	TS99-274B	8062

7590 06/14/2002
George O. Saile
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Poughkeepsie, NY 12603

EXAMINER

ROMAN, ANGEL

ART UNIT PAPER NUMBER

2812

DATE MAILED: 06/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,082

Applicant(s)

THEI ET AL.

Examiner

Angel Roman

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 21-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other:

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because is longer than 150 words.
Correction is required. See MPEP § 608.01(b).

3. The disclosure is objected to because of the following informalities: On page 9, line 6, "the" should be deleted.

Appropriate correction is required.

Claim Objections

4. Claim 21 is objected to because of the following informalities: In lines 1 and 24 "transistors" should be replaced with --transistor--; -- doped with a-- should be inserted

in line 8 in-between the words layer and second; in line 18 a semicolon should be inserted after the word spacers. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 21 and 23-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Cheek et al. U.S. Patent 6,018,180.

Cheek et al. discloses a Salicide field effect transistor with improved borderless contacts openings comprised of; a semiconductor substrate 210 doped with a first conductive type dopant (see column 4, lines 49-52) and having device areas surrounded and electrically isolated shallow trench field oxide areas (220, 230); a gate oxide layer 250 on said device areas, and a conductively patterned polysilicon layer 260

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over said device areas for gate electrodes; lightly doped source/drain areas (310, 300) with said second conductive type dopant in said device areas adjacent to said gate electrodes 260 and an insulating sidewall spacers (280, 290) on the sidewalls of said gate electrodes 260; heavily doped first source/drain contact areas (320, 330) composed of said second conductive type dopant in said device areas adjacent to said insulating sidewall spacers (280, 290); a cobalt or titanium silicide layer 270 on said gate electrodes and on said source/drain contact providing said Salicide field effect transistors (see column 5, lines 11-21); a conformal barrier layer 360, and an interlevel dielectric layer 440 on said Salicide field effect transistor; borderless contact openings 450 in said interlevel dielectric layer 440 and said barrier layer 360 to said source/drain areas and extending over said field oxide 220 with unintentional over-etched field oxide regions at said field oxide-source/drain area interface (see figure 14); a dopant composed of said second conductive type in said substrate under and adjacent to said over-etched field oxide regions in said borderless contact openings providing said source/drain contact areas with a continuous doped region 380 around said over-etched field oxide regions. Cheek et al. also discloses a first conductive type dopant (P-type dopant) and a second type dopant (N-type dopant) for Salicide N-channel FETs, and it is well known and inherent to Cheek et al disclosure that dopant types could be reversed for P channel salicide FETs (see column 7, lines 19-22).

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheek et al. U.S. Patent 6,018,180.

Cheek et al. is applied as above but lacks anticipation on disclosing a single crystal silicon substrate. It would have been obvious to one having ordinary skills in the art at the time the invention was made to disclose single crystal silicon as the substrate in the primary reference of Cheek et al. since single crystal silicon is a conventional and suitable silicon semiconductor used to form transistors.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Okada et al. discloses a transistor form on a single crystal silicon


substrate having a contact with an over etch oxide isolation region 4 comprising a diffusion layer 13 (see figure 19d). Kim, Furuta et al. and Kuroda disclose transistor having contact regions with over etch isolation oxides comprising doped regions surrounding the over-etch isolation regions. Ha et al. discloses a contact with an over-etch doped isolation region.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

AR
June 12, 2002


John F. Niebling
Supervisory Patent Examiner
Technology Center 2800